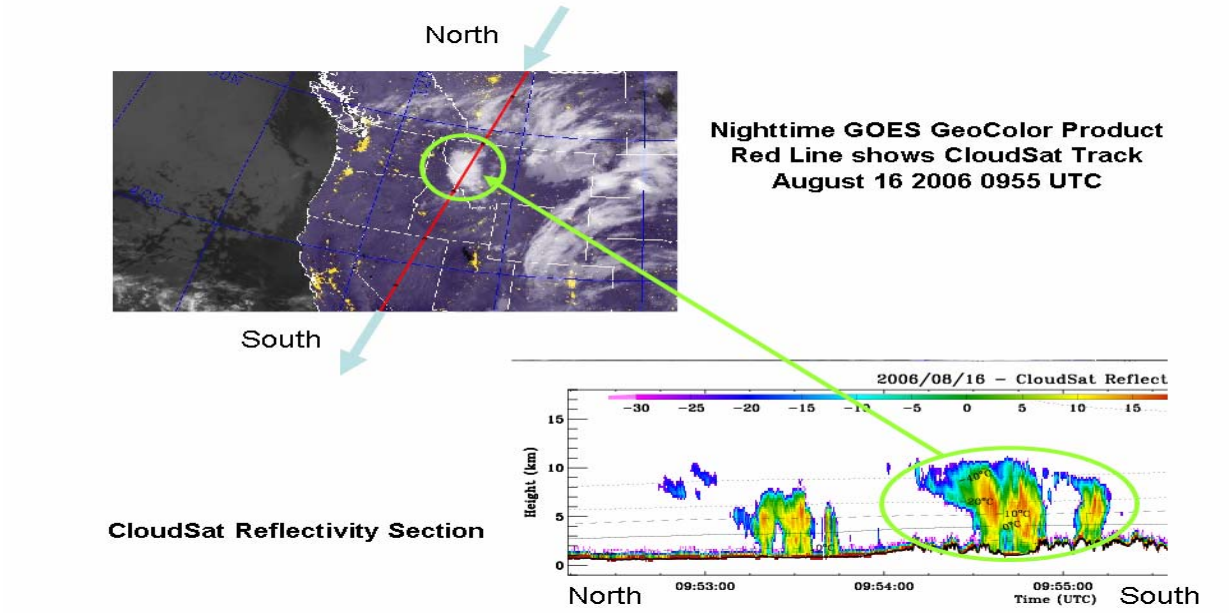
Headliner!

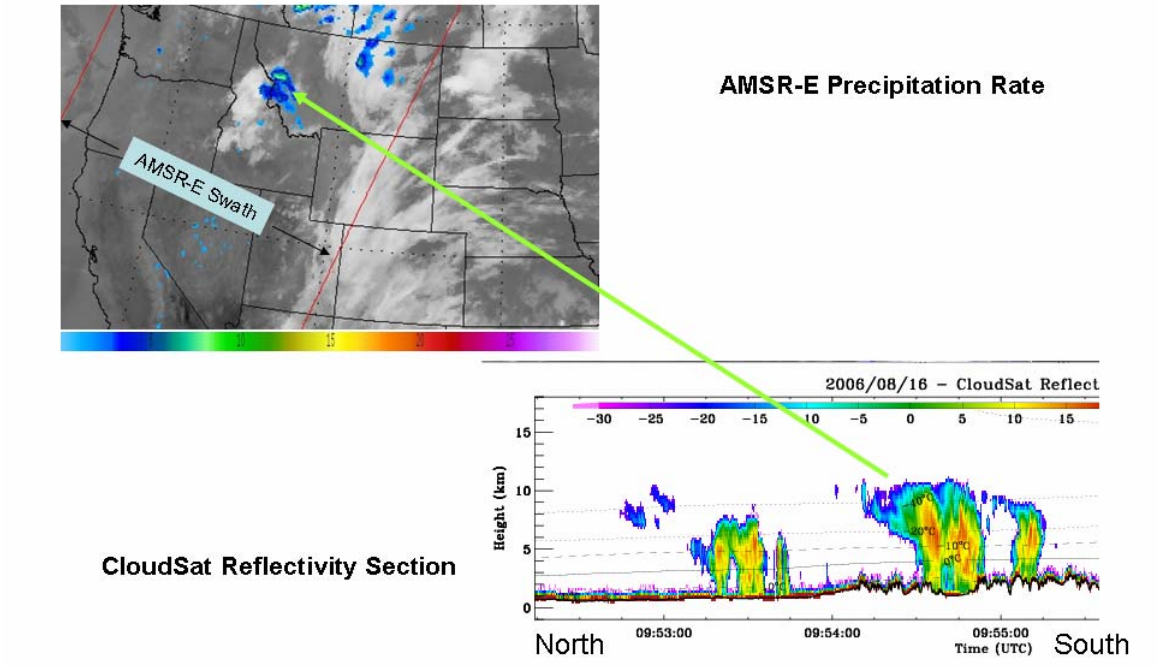
CLOUDSAT PENETRATES THUNDERSTORM

The *Naval Research Laboratory's* NexSat site, now displays near-realtime products using NASA's new spaceborne cloud radar, CloudSat. Launched on April 28, 2006 (data started on June 2, 2006), CloudSat shows the detailed structure of a variety of clouds in the troposphere, ranging from garden variety overcast, fair weather clouds on an otherwise sunny day, rain clouds, and the most spectacular and violent storms (BAMS reference for AMS subscribers).



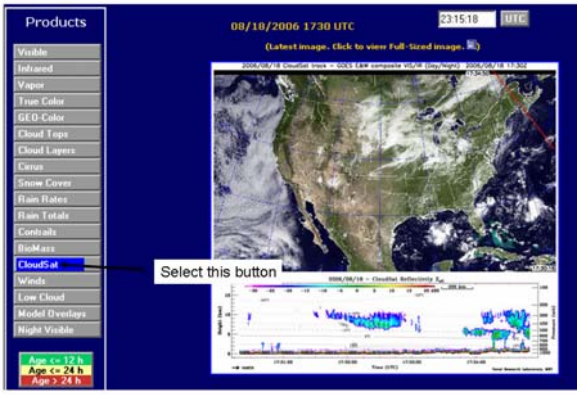
The upper left image in the composite above shows a nighttime GOES infrared "Geocolor" image overlayed with the track of CloudSat in red. As it crosses above the thunderstorm in western Montana the instrument senses the cloud structure (lower right panel). Notice that about half of the crossection has few if any clouds. This corresponds with the lack of clouds seen on the GOES satellite image. The reds and yellows (inside oval) correspond to deep clouds and likely convective precipitation within the thunderstorm cluster. On the infrared GOES image we see only the tops of this thunderstorm, shown in white gray shades. Also plotted on the CloudSat

trace is vertical temperature information from NOGAPS, the U.S. Navy's forecast system model. At the surface terrain height is shown. Unlike ground-based weather radars, CloudSat is never blocked by terrain since it views from above.



CloudSat is not the only instrument flying in a satellite cluster called the "A Train" (Aqua, CloudSat, CALIPSO, PARASOL, and Aura). Aqua contains the Advanced Microwave Scanning Radiometer (AMSR-E) which shows precipitation from the thunderstorm we have been observing (blues and greens in upper left panel). The infrared image shows us the tops of the storm; the AMSR-E product show us the rate at which rain hits the ground; and the CloudSat trace gives the details in-between.

Although there are no plans for CloudSat-like sensors on future operational systems, CloudSat has a crucial role in preparation for systems like NPOESS. It will enable us to calibrate algorithms for improved cloud products. The examples above give only a glimpse into the wide variety of applications that are possible. The next radar may fly on EarthCARE, a joint European-Japanese mission to acquire vertical profiles of clouds and aerosols.



To see these products on the NexSat website, select the CloudSat button as shown by the diagram on the left.

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http://www.nrlmry.navy.mil/NEXSAT.html